You are right in your surmise that the column of maximum temperatures is the temperature at the ground before the thermometer starts aloft; hence the fact that we placed the high reading in minimum column.

We have often found on coming down that both indices have moved on our Six's, showing that there were warmer currents of air aloft. Thus, e. g., we leave the earth with an earth temperature of 60°; go up, say, 1,200 feet; our reading on taking down might be, maximum 65°, minimum 52°; the duration of flight, say, from 8:25 to 9:15 p. m.; earth temperature at ending, say, 39°.

We may enter the warm current of air at an altitude of 500 feet and enter a colder one at 600 or 800, or we may get our minimum record up as far as 600 feet and stop in the warmer current at our highest altitude (1,200).

Thermometer ascensions made at Bergen Point, Bayonne, N. J., by Bayonne kite corps.

Number.	Ascension. Date.	P. M. Began.	P. M. Ended.	Kite record. Altitude.	Temperature. Max.	Temperature. Min.	Local conditions. Temperature. Beginning.	Temperature. Ending.	Barometer.	Hygroscope.	Wind.	Sky. Character	Sky. Remarks.	New York. Temperature. Beginning.	Temperature. Ending.	Wind at beginning of ascension. Direction.	Wind at beginning of ascension. Velocity.	Average daily record furnished by the observer at Bergen Point, Bayonne, N. J.§ Same day.	Second day.	Third day.
1	2	3 H. M.	4 H. M.	5 Feet.	6 °	7 °	8 °	9 °	10 Ins.	11 %	12	13	14	15 °	16 °	17	18 Miles.	19 °	20 °	21 °
122	Jan. 3, 1900 ...	8 30	9 45	755	22	18	.....	20	30.40	73	nw.	Clear.	.....	22	22	nw.	11	24.5	25.5	40
123	Jan. 6, 1900 ...	8 45	10 00	542	36	30	.....	33	30.50	70	sw.	P. cloudy.	Cumulus.	37	36	nw.	12	41	37	40.5
124	Jan. 8, 1900 ...	8 55	10 30	2,350	27	10	.....	18	30.45	68	nw.	Clear.	Moonlight.	26	23	nw.	13	40.5	23.5	35.5
125	Jan. 9, 1900 ...	8 25	9 50	1,854	28	19	.....	24	30.41	70	nw.	Clear.	Lunar halo, 6:30.	32	32	s.	12	23.5	35.5	30.5
126	Jan. 13, 1900 ..	8 32	10 15	1,950	33	27	.....	30	30.15	72	.....	P. cloudy.	L. halo, 8; l. corona, 11.	33	32	sw.	4	31	33.5	37.5
127	Jan. 17, 1900 ..	8 20	9 50	850	35	31	.....	33	30.60	83	se.	Cloudy.	Cumulus.	35	34	e.	16	37	37	44
128	Jan. 19, 1900 ..	9 00	10 15	¶	48	46	.....	47	30.05	100	ne.	Cloudy.	Dense fog.	51	50	e.	9	44	50	34
129	Jan. 20, 1900 ..	8 25	9 35	1,100	53	48	.....	50	29.85	98	sw.	Cloudy.	.....	54	52	sw.	14	50	34	40.5
130	Jan. 27, 1900 ..	8 35	10 00	1,480	25‖	20	.....	27	30.30	79	nw.	Clear.	.....	26	26	w.	4	22.5	32	23.5
131	Feb. 6, 1900...	8 30	10 12	1,640	39	33	.....	36	30.15	72	sw.	Clear.	.....	41	40	nw.	12	35	35	40
132	Feb. 10, 1900..	8 15	9 30	970	33	28	.....	31	30.30	93	ne.	Cloudy.	Lunar halo.	34	34	nw.	6	33	38	39
133	Feb. 12, 1900..	2 50	4 00	950	40	36	.....	39	30.22	100	e. by se.	Cloudy.	Mist.	41	41	ne.	12	39	50.5	35
134	Feb. 17, 1900..	9 15	9 25	600	22	15	.....	18	29.77	96	ne.	Cloudy.	Snow.	24	23	n.	14	25.5	23	21
135	Feb. 21, 1900..	8 45	10 30	1,150	38‖	42	.....	38	30.10	97	se.	Cloudy.	.....	39	38	ne.	16	31	52.5	38.5
136	Feb. 22, 1900..	2 15	4 25	1,500	62	54	.....	60	29.30	90	sw.	P. cloudy.	3 pair U. S. Navy pigeons released.	50	49	nw.	10	52.5	38.5	41
137	Feb. 24, 1900..	8 12	9 30	1,212*	47	38	.....	45	29.40	100	se.	Cloudy.	Rain, 8:45.	46	45	se.	13	41	13	17.5
138	Feb. 27, 1900..	8 25	10 30	2,309	20	15	.....	18	30.75	70	nw.	Clear.	.....	17	18	nw.	9	13.5	26.5	47.5
139	Mar. 7, 1900...	8 15	10 15	1,840	34	28	.....	31	30.45	60	nw.	Clear.	.....	39	37	nw.	14	40.5	32.5	38.5
a	.....†	8 40	9 00	1,000	.....	32	.....	32	.....	....	.....	.....	Car ascension.	38	38	nw.	14	... ..	.....	.....
b	.....†	9 12	9 30	1,000	.....	30	.....	31	.....	....	.....	.....	.....	38	37	nw.	26	.....	.....	.....
c	.....†	9 35	10 00	1,000	.....	30	.....	31	.....	....	.....	.....	.....	37	37	nw.	24	.....	.....	.....
140	Mar. 10, 1900..	9 42	9 55	200	38	36	....	38	29.85	83	n. by w.	P. cloudy.	Cirrus upper, ne.	37	36	nw.	20	43.5	28.5	24
141	Mar. 17, 1900..	8 30	10 35	1,906	18	12	.....	16	30.20	70	nw.	Clear.	....	16	14	ne.	82	22	23	40.5
142	Mar. 21, 1900..	8 23	10 05	1,650	30‖	26	.....	30	30.20	63	w.	Clear.	.....	32	31	nw.	12	32.5	37	44.5
143	Mar. 24, 1900..	8 45	9 50	980	34‖	37	.....	35	30.10	73	nw.	Clear.	.....	33	31	nw.	14	31.5	36	37
144	Mar. 31, 1900..	8 33	10 25	850	37‖	39	.....	37	29.90	70	nw.	Clear.	.....	38	35	nw.	42	40	45	49.5
145	Apr. 3, 1900 ...	8 45	10 00	870	44‖	47	.....	45	29.98	83	sw.	Clear.	Moonlight.	45	43	nw.	22	45.5	43.5	44
146	Apr. 7, 1900 ...	9 16	9 55	680	48	46	.....	47	30.70	75	nw.	Clear.	Meteors.	53	50	nw.	24	52.5	50	40
147	Apr. 11, 1900 ..	8 20	9 40	890	40	38	.....	39	30.30	97	ne.	P. cloudy.	Hail and rain, 10:36.	42	42	se	12	42	43.5	45
148	Apr. 13, 1900 ..	8 35	10 05	1,160	39	32	.....	37	29.90	90	nw.	Cloudy.	.....	43	41	nw.	11	45	46	51.5
149	Apr. 14, 1900 ..	9 05	9 48	1,009	40‖	42	.....	40	30.15	80	w. by s.	Clear.	Moonlight.	45	45	nw.	20	46	51.5	53
150	Apr. 18, 1900 ..	8 35	10 12	963	59‖	64	.....	60	30.10	98	sw.	Cloudy.	.....	54	55	s.	25	58	66	60.5
151	May 2, 1900 ...	8 40	10 30	1,780	50	48	. . ....	48	29.85	90	ne.	P. cloudy.	Cumulus	59	57	e.	12	57	66	54
152	May 4, 1900 ..	8 45	10 40	1,155	49	40	.....	38	29.90	95	sw.	Cloudy.	.....	52	49	sw.	10	54	51	55.5
153	May 10, 1900 ..	8 30	10 05	1,578	48	44	.....	46	30.10	70	nw.	Clear.	Moonlight, meteors.	49	48	n.	12	49	48	61
154	May 12, 1900 ..	8 41	9 50	780	58	50	.....	56	30.10	78	sw.	P. cloudy	....	57	57	s.	18	61	70	76
155	May 15, 1900 ..	8 30	10 15	970	79	75	.....	78	29.94	78	w.	Cloudy.	.....	82	74	nw.	22	79.5	70	59
156	May 18, 1900 ..	8 45	9 55	950*	65	60	.....	64	29.75	100	s.	Rain.	.....	67	65	s.	10	66	56.5	62
157	May 25, 1900 ..	7 45	2 00‡	1,875	58	46	.....	52	30.25	80	ne.	P. cloudy.	.....	61	51	ne.	11	59	57	64.5
a	..... .†	8 02	8 30	1,000	.....	56	.....	56	.....	....	.....	.....	Car used.	60	59	ne.	22	.....	.....	.....
b	.....†	8 40	9 30	1,000	.....	54	.....	54	.....	....	.....	.....	.....	59	58	ne.	18	.....	.....	.....
c	.. ..†	9 37	10 30	1,000	.....	53	.....	54	.....	....	.....	.....	....	58	57	ne.	23	.....	.....	.....
d	.....†	10 42	11 30	1,000	.....	53	.....	52	.....	....	.....	.....	.....	57	56	ne.	20	.....	.... .	.....
e	May 25-26, 1900†	11 35	12 30‡	1,000	.....	52	.....	52	.....	....	.....	.....	.....	56	54	ne.	23	.....	.....	.....
f	May 26, 1900†.	12 37‡	1 30‡	1,000	.....	48	.....	52	.....	....	.....	.....	....	53	52	ne.	22	.....	.....	.....
158	May 26, 1900 ..	9 15	10 30	853	50‖	53	.....	52	30.10	98	e.	Cloudy.	Cumulus.	58	58	n.	9	57	64.5	56.5
159	May 29, 1900 ..	8 45	10 40	980	49‖	53	.....	51	30.35	70	w.	Clear.	.....	54	53	s.	9	55.5	61	75
160	May 30, 1900 ..	3 16	5 20	960	76	72	.....	75	30.35	65	sw.	Clear.	Northeast aloft.	70	71	se.	10	61	75	74.5
161	June 2, 1900...	8 30	10 40	1,203	66	64	.....	65	29.90	96	sw.	Cloudy.	North-northwest aloft.	69	68	sw.	16	74.5	74.5	64.2
162	June 5, 1900...	4 30a	5 45a	985*	50	48	.....	51	30.18	68	nw.	Clear.	.....	57	56	nw.	5	64	73	64.5
163	June 12, 1900..	8 15	9 45	1,349	69	63	.....	67	30.15	93	se.	Cloudy.	Upper northeast.	76	70	se.	12	76.5	67.5	77.5
164	June 16, 1900..	9 35	10 30	1,158	65	58	.....	63	30.07	90	sw.	Cloudy.	....	68	65	w.	6	68	60	64
165	June 23, 1900..	8 50	9 26	600*	72	66	.....	69	30.00	68	sw.	P. cloudy.	Moonlight.	63	63	s.	9	71.5	70.5	82.5
166	June 29, 1900..	8 30	9 00	250*	76	72	.....	75	29.70	97	sw.	P. cloudy.	Hazy.	83	83	sw.	22	76	70	69.5
167	June 30, 1900..	6 10	7 00	600*	75	70	.....	73	.....	....	nw.	Clear	At Midland Beach, S. I.	74	72	nw.	25	70	69.5	70.5

* Ascensions marked thus * cord was used; piano wire used at all others. † Second thermometer under transit car taken down for reading hourly. ‡ A. M. of the 26th. § Mr. Willard W. Hotchkin. ‖ Cases where the minimum temperature occurs near the ground. ¶ Approximate, 0.85 of a mile of wire out as shown by cyclometer on reel. a This ascension began at 4:30 a. m. of the 5th.

NOTES BY THE EDITOR.

WEATHER FORECASTS IN MEXICO.

By a recent arrangement between the Director of Federal Telegraphs in Mexico, Señor Camilo A. Gonzales, and the Chief of the United States Weather Bureau, the latter has authorized Dr. I. M. Cline, Forecast Official at Galveston, Tex., to telegraph daily the location of the centers of the highest and lowest pressures in the neighborhood of the Rocky Mountain region in addition to the reports from stations received in accordance with previous agreements. This extension of the international work went into effect December 12, and Señor Gonzales writes that he is thus able to forsee the occurrence of northers on the Gulf one or two days in advance.

It may be of some historical interest to add that in the autumn of 1871 the Editor was able to point out the fact that the origin and character of the northers of Texas and the Gulf, about which much had been written by American students, had been made plain by the study of the United States Daily Weather Map; that, in fact, they represented simply the southward underflow of a thin layer of cold air which started as a cold wave or blizzard on our northern frontier;

that, furthermore, when these northerly winds reached the Gulf coast of Texas, the resistances of the land surface being succeeded by the lesser resistances of the waters of the Gulf, they blow with greatly increased force; that, furthermore, this cold air piling up against the precipitous coast of the Gulf of Campeche must give rise to cloudy and, perhaps, rainy weather, and the development of low pressures and cyclonic winds, such that storm centers would start thence and move northeastward toward our Gulf States. The general mechanism of this process is partly exemplified in the MONTHLY WEATHER REVIEW for 1893, pp. 226 and 363, and Chart I for December, 1893.

METEOROLOGY IN COSTA RICA.

The Chief of Bureau is much pleased to learn that after an interregnum of over a year the Government of Costa Rica has taken favorable action with regard to the famous Instituto Fisico-Geografico, and on September 1, 1900, reestablished Prof. H. Pittier as director of that institution, which he founded and conducted for so many years in the interest of all those branches of science and education that constitute the foundations of national prosperity. During the years 1899 and 1900 Professor Pittier was located on the Atlantic coast of Costa Rica, which is very unhealthy as compared with the Pacific coast and the interior, but his return to the good climate of San Jose will, it is hoped, gradually free him from the effects of the pernicious fevers and its resulting mental depression. The printing of the annals, and especially the bulletin of occasional papers, will be resumed at once. Our readers will be pleased to know that a monthly résumé of the conditions in Costa Rica will be communicated promptly for publication in each number of the MONTHLY WEATHER REVIEW. We hope that eventually it may be convenient to publish similar summaries for many other states in the Western Hemisphere.

It is greatly to be hoped that the system of rainfall or climatic stations in Costa Rica may be strengthened by the establishment of new ones in unfrequented localities, and especially by the inauguration of meteorological stations of the first order at Port Limon, on the Caribbean coast, and at some point on the Pacific coast, cooperating with the central station at San Jose, which represents the highlands of the southwestern slope of the central chain of mountains between which and the central chain of Nicaragua lies the valley containing Lake Nicaragua.

MICRO-PHOTOGRAPHS OF SNOW CRYSTALS.

According to an article in the Proceedings of the American Academy, Boston, Mass., April 13, 1898, page 431, by Dr. J. E. Wolff, the collection of about 400 of the most interesting micro-photographs of snow crystals made during the years, 1870–1895, by Mr. W. A. Bentley, of Nashville, Vt., has been acquired at a nominal cost by the Harvard Mineralogical Museum:

The scientific value of the collection is enhanced by Mr. Bentley's notes, and by the meteorological observations made by himself at the time that many of the sets from individual storms were obtained, including date, temperature, snowfall, condition of the clouds, direction and force of the wind, and sometimes notes as to the general character of the snow crystals as the storm progressed.

The magnifications range from 52 to 31 diameters, and are evidently much higher than those of previous collections. The same general types of crystals noticed by previous observers recur here, such as the star form, star form with solid nucleus, and tabular form, while the columnar form (hexagonal prism and base) is rare, and the hexagonal pyramid is not seen. Variations of skeleton growth of hexagonal plates comprising the base and prism of the first order, predominate; less commonly the intermediate axes are visible by lines of growth or air inclusions, and rarely a triangular development suggests rhombohedral symmetry. The presence of the varied markings due to inclusions of air is much more prominent in these than any as yet published, owing to the higher magnification and the superb technique of the photographs. Mr. Bentley also confirms the previous observation, that large stellate crystals are more common at the higher temperatures and the tabular ones at the lower.

Some photographs of frost crystallizations are included.

This large and perfect collection may justly be called a monument to the patience, skill, and enthusiasm of the maker.

In A Study of Snow Crystals, recently published in Appleton's Popular Science Monthly, (May, 1898, pp. 75–82), by W. A. Bentley and G. H. Perkins, the authors give further account of this collection with a reproduction of 27 examples.

The study of the forms of snow crystals has been a favorite subject with many physicists and meteorologists. Prof. Dr. G. Hellmann published in 1893 a little work entitled Schnee Krystalle, in which he gives a complete bibliography of the subject and a sketch of the progress of our knowledge, and copies very many diagrams from the older writers: Olaus Magnus, 1555; Descartes, 1637; E. Bartholinus, 1660; R. Hooke, 1665, who first used the magnifying glass and gives more than a hundred forms; F. Martens, 1675, who describes how from a little drop like a grain of sand the crystal grows by accessions from the surrounding fog or cloud until it becomes a hexagonal disk, transparent as glass, and so on, step by step, atom by atom is frozen on to the corners of the disk until it becomes a perfect star—Martens first distinguishes the forms of crystals in their connection with the prevailing weather, as observed by him at Spitzbergen; D. Rossetti, 1681, who distinguishes 6 types among the 60 different forms of snow—some of these types he subdivides into varieties, especially the rosette type, which includes 8 varieties. From this date on the number of publications becomes numerous; we may mention especially the great work of Jan Engelmann, who gives copper plates of 420 forms, although some of these must be considered very doubtful; two editions of this book were published, 1747 and 1771. The first person to form snow crystals artificially was Johann Carl Wilcke, of Sweden, who published two memoirs, 1761 and 1769, in the Transactions of the Royal Academy of Sciences at Stockholm. In 1820, the famous English navigator, Captain William Scoresby, Jr., published 96 snow figures, which have been widely reproduced in works on physics and meteorology. He distinguishes 5 genera, and under these 7 species and many varieties, some of them very rare indeed, near the surface of the earth, but probably more frequent in the upper regions; his 5 varieties have been widely accepted in descriptions of snowflakes, viz: (1) thin plates; (2) flat or spherical nuclei with branches in different planes; (3) fine spiculæ or six-sided prisms; (4) hexagonal prisms; (5) spiculæ having one or both extremities affixed to the center of a lamellar crystal. He also studied the relation of these forms to the weather and the temperature, but subsequently Karl Fritsch, 1853, showed that such relations are quite questionable, and the same result is also arrived at by James Glaisher. The latter observer, 1855, published plates containing 151 snow crystals, most of which are idealized pictures more delicate and symmetrical than is ever found in nature. It was the study of Glaisher's work that led Dr. Hellmann to pursue his investigations and, eventually, to apply micro-photography to the preservation of these fleeting forms. We ought, perhaps, to add that, among American observers, one should be put on record, Mrs. F. E. Chickering, of Portland, Me., who published a work anonymously entitled Cloud Crystals, A Snowflake Album, New York, D. Appleton & Co., 1864, reproducing on 27 plates original drawings, made between 1857 and 1863, of 189 forms observed at Portland, Me. This work contains also interesting communications on this subject by Prof. Louis Agassiz,